AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in the above-referenced application:

1. (Canceled) Apparatus for converting an optical signal to a digital signal comprising:

a photodiode converting an optical signal to a current;

a transimpedance amplifier converting the photodiode current to a voltage,

a sawtooth generator producing a sawtooth wave, and

a comparator comparing the sawtooth wave with the voltage output of the transimpedance amplifier, producing a pulse width modulated digital output.

2. (Canceled) The apparatus of Claim 1 where the sawtooth generator also includes a synchronization input.

3. (Canceled) The apparatus of Claim 1 where the transimpedance amplifier, sawtooth generator, and comparator are in a common package.

4. (Currently amended) An integrated circuit for converting an optical signal to a digital signal comprising:

a photodiode converting an optical signal to a current;

a transimpedance amplifier converting the photodiode current to a voltage at an output of the transimpedance amplifier,

a sawtooth generator producing a sawtooth wave, and

a comparator directly coupled to the output of the transimpedance amplifier, the comparator comparing the sawtooth wave with the voltage output of the transimpedance amplifier to produce~~, producing~~ a pulse-width modulated digital output.

5. (Currently amended) The ~~apparatus~~ integrated circuit of Claim ~~5~~ 4 further comprising ~~where the photodiode further includes~~ an optical filter.

6. (Currently amended) The ~~apparatus~~ integrated circuit of Claim ~~5~~ 4 wherein a plurality of converter units, each converter unit comprising a photodiode with an optical filter, transimpedance amplifier, and comparator, are synchronized to a common signal.

7. (Canceled) The apparatus of Claim 6 where the plurality of converter units are driven by a sawtooth generator internal to one of the converter units.

8. (Canceled) The apparatus of Claim 6 where the plurality of converter units are driven by a sawtooth generator external to all of the converter units.

9. (Canceled) The apparatus of Claim 5 wherein a plurality of converter units, each converter unit comprising a photodiode with an optical filter, transimpedance amplifier, comparator, and sawtooth generator, are synchronized.

10. (Currently amended) A method of converting the intensity of an optical ~~signal~~ source to a ~~digital~~ pulse-width modulation signal in a single integrated circuit comprising:

filtering incident light from the optical ~~signal~~ source such that wavelengths of visible light impinge a sensor sensitive to a select range of wavelengths, wherein the select range of wavelengths is associated with one of red, green and blue light;

converting the ~~optical signal~~ select range of wavelengths of visible light to a current;

converting the current ~~representing the optical signal~~ to a voltage ~~representing the optical signal~~;

generating a sawtooth wave, and

comparing the sawtooth wave to the voltage ~~representing the optical signal~~ without inverting the voltage representing the select range of wavelengths of visible light ~~and producing~~ to produce a digital pulse-width modulated output, wherein the steps of converting the current, generating and comparing are accomplished in a single

integrated circuit.

11. (Original) The method of Claim 10 where the sawtooth wave is synchronized to an external signal.

12. (Canceled) The method of Claim 10 further including the step of filtering the optical signal.

13. (New) An apparatus for converting light to a digital signal comprising:

a single module comprising a ground pin, a single supply pin, and an output pin, the module further comprising:

a photodiode configured to convert incident light to a current;

a transimpedance amplifier configured to convert the current to a voltage;

a sawtooth generator configured to produce a sawtooth wave; and

a comparator configured to receive the sawtooth wave and the voltage to produce a pulse-width modulated digital output, wherein an output of the transimpedance amplifier is directly applied to an input of the comparator.

14. (New) The integrated circuit of Claim 13 where the module further comprises a substrate.

15. (New) The integrated circuit of Claim 14 where the transimpedance amplifier, sawtooth generator, and comparator are implemented on the substrate.

16. (New) The integrated circuit of Claim 13 where the module further comprises a synchronization pin.

17. (New) The integrated circuit of Claim 13 where the transimpedance amplifier is directly coupled to the comparator.